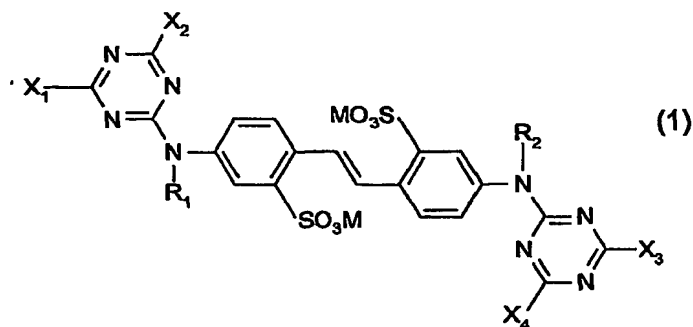


- 22 -

## Claims

1. A storage-stable fluorescent whitener formulation comprising

- (a) 5 – 60% by weight, based on the total weight of the whitener formulation, of at least one compound of formula (1)



wherein

R<sub>1</sub> and R<sub>2</sub> are, independently from each other, hydrogen; unsubstituted C<sub>1</sub>-C<sub>8</sub>alkyl or substituted C<sub>1</sub>-C<sub>8</sub>alkyl,

X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are, independently from each other, -N(R<sub>3</sub>)R<sub>4</sub> or -OR<sub>5</sub>, wherein

R<sub>3</sub> and R<sub>4</sub> are, independently of each other, hydrogen; cyano; unsubstituted C<sub>1</sub>-C<sub>8</sub>alkyl; substituted C<sub>1</sub>-C<sub>8</sub>alkyl; unsubstituted C<sub>5</sub>-C<sub>7</sub>cycloalkyl or unsubstituted C<sub>5</sub>-C<sub>7</sub>cycloalkyl; or

R<sub>3</sub> and R<sub>4</sub>, together with the nitrogen atom linking them, form a heterocyclic ring, and

R<sub>5</sub> is unsubstituted C<sub>1</sub>-C<sub>8</sub>alkyl or substituted C<sub>1</sub>-C<sub>8</sub>alkyl, and

M is hydrogen or a cation,

- (b) 0.01 – 1% by weight, based on the total weight of the whitener formulation, of at least one anionic polysaccharide,

- (c) 0 – 25% by weight, based on the total weight of the whitener formulation, of at least one electrolyte,

- (d) 0 – 20% by weight, based on the total weight of the whitener formulation, of at least one dispersant,

- (e) 0 – 30% by weight, based on the total weight of the whitener formulation, of at least one further fluorescent whitener,

- (f) 0 – 20% by weight, based on the total weight of the whitener formulation, of at least one further optional component, and

- (g) water to make up 100% by weight.

- 23 -

2. A storage-stable fluorescent whitener formulation according to claim 1 comprising  
5 – 60% by weight, based on the total weight of the whitener formulation, of at least  
one compound of formula (1), wherein  
R<sub>1</sub> and R<sub>2</sub>, independently from each other, hydrogen or C<sub>1</sub>-C<sub>4</sub>alkyl, especially hydrogen,  
5 X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are independently from each other a radical of formula -N(R<sub>3</sub>)R<sub>4</sub>, wherein  
R<sub>3</sub> and R<sub>4</sub> are preferably, independently from each other, hydrogen; cyano; C<sub>1</sub>-C<sub>8</sub>alkyl  
which is unsubstituted or substituted by hydroxy, carboxy, cyano, -COOH, -  
H<sub>2</sub>NC(NH)NH<sub>2</sub>-, -CONH<sub>2</sub> or phenyl, and wherein the C<sub>1</sub>-C<sub>8</sub>alkyl group is uninterrupted  
or interrupted by -O-; unsubstituted C<sub>5</sub>-C<sub>7</sub>cycloalkyl or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-  
10 C<sub>7</sub>cycloalkyl; or  
R<sub>3</sub> and R<sub>4</sub>, together with the nitrogen atom linking them, form an unsubstituted  
morpholino, piperidine or pyrrolidine ring or a C<sub>1</sub>-C<sub>4</sub>alkyl-substituted morpholino,  
piperidine or pyrrolidine ring.
- 15 3. A storage-stable fluorescent whitener formulation according to claim 1 comprising  
5 – 60% by weight, based on the total weight of the whitener formulation, of at least  
one compound of formula (1), wherein  
X<sub>1</sub> and X<sub>3</sub> are -NH<sub>2</sub>,  
X<sub>2</sub> and X<sub>4</sub> are, independently of each other, a radical of formula -N(R<sub>3</sub>)R<sub>4</sub>, wherein  
20 R<sub>3</sub> and R<sub>4</sub> are, independently from each other, hydrogen; cyano; C<sub>1</sub>-C<sub>8</sub>alkyl which is  
unsubstituted or substituted hydroxy, carboxy, -COOH, cyano, -CONH<sub>2</sub>, NHC(NH)NH<sub>2</sub>  
or phenyl, and wherein the C<sub>1</sub>-C<sub>8</sub>alkyl group is uninterrupted or interrupted by -O-;  
unsubstituted cyclohexyl or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted cyclohexyl; or  
R<sub>3</sub> and R<sub>4</sub>, together with the nitrogen atom linking them, form an unsubstituted  
25 morpholino, piperidine or pyrrolidine ring or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted morpholino,  
piperidine or pyrrolidine ring.
4. A storage-stable fluorescent whitener formulation according to anyone of the preceding  
claims comprising  
30 5 to 50% by weight, preferably 10 to 50% by weight, based on the total weight of the  
formulation, of at least one compound of formula (1).
5. A storage-stable fluorescent whitener formulation according to anyone of the preceding  
claims wherein the anionic polysaccharide is selected from the group consisting of sodium

- 24 -

alginate, carboxymethylated guar, carboxymethylcellulose, carboxymethyl-starch, carboxymethylated locust bean flour and xanthan gum.

5 6. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising  
0.05 to 0.5% by weight, preferably 0.1 to 0.3% by weight, based on the total weight of the formulation, of at least one anionic polysaccharide.

10 7. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims wherein the electrolyte or the mixture of electrolytes are selected from the group consisting of alkali metal salts and salts of lower carboxylic acids.

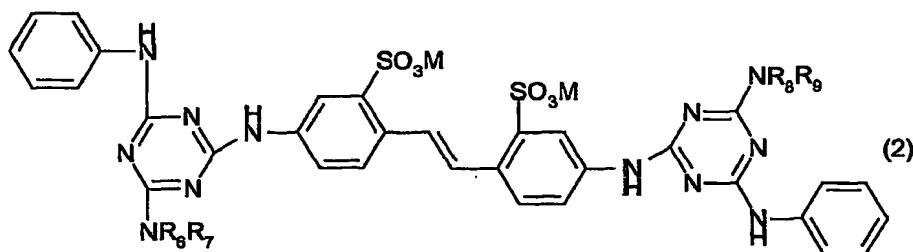
15 8. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising  
0.5 to 20% by weight, preferably 0.5 to 15% by weight, based on the total weight of the formulation, of at least one electrolyte.

20 9. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims wherein the dispersant or the mixture of dispersants are selected from the group consisting of alkylbenzenesulfonates, alkyl or alkenyl ether-sulfonate salts, saturated or unsaturated fatty acids, alkyl or alkylene ether-carboxylic salts, sulfo-fatty acid salts or esters, phosphate esters, polyoxyethylene alkyl or alkenyl ethers, polyoxyethylene alkylvinyl ethers, polyoxypropylene alkyl or alkenyl ethers, polyoxybutylene alkyl or alkenyl ethers, higher fatty acid alkanolamides or alkylene oxide adducts, sucrose/fatty acid esters, fatty acid/glycol  
25 monoesters, alkylamine oxides and condensation products of aromatic sulfonic acids with formaldehyde and lignin-sulfonates.

30 10. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising 0.1 to 20% by weight, preferably 0.1 to 10% by weight, based on the total weight of the formulation, of at least one dispersant.

11. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising of at least one further fluorescent whitener of formula (2)

- 25 -



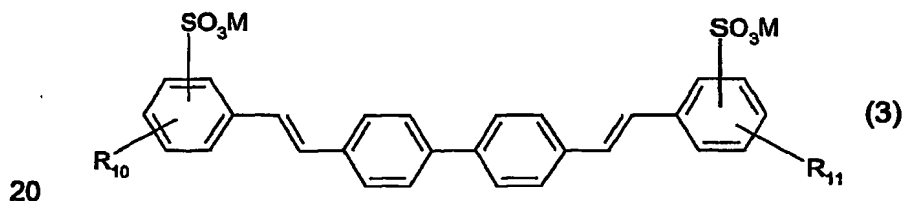
wherein

R<sub>6</sub> and R<sub>8</sub>, independently from each other, are hydrogen; unsubstituted C<sub>1</sub>-C<sub>8</sub>alkyl or substituted C<sub>1</sub>-C<sub>8</sub>alkyl,

- 5 R<sub>7</sub> and R<sub>9</sub>, independently from each other, are hydrogen; unsubstituted phenyl; unsubstituted C<sub>1</sub>-C<sub>8</sub>alkyl or substituted C<sub>1</sub>-C<sub>8</sub>alkyl, or  
 NR<sub>6</sub>R<sub>7</sub> and/or NR<sub>8</sub>R<sub>9</sub> form a morpholino ring,  
 and M is hydrogen or a cation.

- 10 12. A storage-stable fluorescent whitener formulation according to claim 11 wherein  
 R<sub>6</sub> and R<sub>8</sub>, independently from each other, are hydrogen; unsubstituted C<sub>1</sub>-C<sub>2</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkyl, which is substituted by hydroxy or C<sub>1</sub>-C<sub>4</sub>alkoxy,  
 R<sub>7</sub> and R<sub>9</sub>, independently from each other, are unsubstituted phenyl; unsubstituted C<sub>1</sub>-C<sub>2</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkyl, which is substituted by hydroxy or C<sub>1</sub>-C<sub>4</sub>alkoxy, or  
 15 NR<sub>6</sub>R<sub>7</sub> and/or NR<sub>8</sub>R<sub>9</sub> form a morpholino ring,  
 and M is an alkali metal atom.

13. A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising of at least one further fluorescent whitener of formula (3)



wherein

R<sub>10</sub> and R<sub>11</sub>, independently from each other, are hydrogen; C<sub>1</sub>-C<sub>8</sub>alkyl; C<sub>1</sub>-C<sub>8</sub>alkoxy or halogen, and M is hydrogen or a cation.

- 26 -

- 14.** A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising 0 to 25 % by weight, preferably 0 to 20 % by weight, of at least one further fluorescent whitener of formula (2) and/or formula (3).
- 5    **15.** A storage-stable fluorescent whitener formulation according to anyone of the preceding claims wherein optional components are selected from the group consisting of preservatives; Mg/Al silicates; odour improvers; perfuming agent; antifoam agents; builders; protective colloids; stabilizers; sequestering agents and antifreeze agents.
- 10   **16.** A storage-stable fluorescent whitener formulation according to anyone of the preceding claims comprising 0.1 to 20% by weight, preferably 0.1 to 10% by weight, particularly preferably 0.2 to 5% by weight based on the total weight of the formulation, of at least one optional component.
- 15   **17.** A process for the preparation of a storage-stable fluorescent whitener formulation according to any one of the preceding claims, which comprise mixing the moist filter cake or the dry powder of the fluorescent whitening of formula (1) with least one anionic polysaccharide and water, and homogenizing the formulation.
- 20   **18.** The use of a storage-stable fluorescent whitener formulation according to any one of claim 1 – 16 for the preparation of a detergent composition.